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Reg. No. :

Name :

**Eighth Semester B.Tech. Degree Examination, April 2014
(2008 Scheme)**

08.815 (Elective - V)

INTEGRATED OPTICS AND PHOTONIC SYSTEMS (T)

Time : 3 Hours

Max. Marks : 100

PART - A

Answer **all** questions. Each question carries **4** marks.

1. Distinguish between core refractive index profiles of GI and SI fibers.
2. What are the merits of OIC ? Give four of them.
3. Which optical amplifier gives maximum bandwidth ? Why ?
4. Explain features of LiNbO_3 . Give one application.
5. Distinguish between dark and bright solitons.
6. What is the mode of propagation in a planar waveguide ? Explain.
7. Give merits of polymer waveguides.
8. Explain what is ASE noise present in a doped fiber amplifier.
9. Estimate the peak power required for a fundamental soliton pulse.
10. Give the working of a acousto-optic modulator.





PART - B

Answer **any two** questions from **each** Module. **Each** question carries **ten** marks.

MODULE - I

11. Discuss about the choice of different materials used for optical IC's. Explain their features and applications.
12. What are the various techniques used for photonic wave guide fabrication ? Explain.
13. Prove that there exists only finite and discrete number of modes present in a planar wave guide. Use ray optics.

MODULE - II

14. Explain the working of a dual channel electro optic modulator, using neat diagrams.
15. Explain the working of the following integrated optical devices.
 - a) Semiconductor optical amplifiers
 - b) Optical detectors.
16. Explain different types of optical couplers. Discuss in terms of coupled mode theory.

MODULE - III

17. Explain the working of a Erbium Doped Fiber Amplifier. Discuss about the noise present in this amplifier.
18. Compare the performance of direct detection and coherent light wave systems.
19. Explain how solitons are formed and propagated over long distances.